



# Project Fact Sheet

---

## *Ozone as an Aqueous Disinfectant*

### **GOALS**

- Demonstrate ozone potential in fruit and vegetable packing or storage operations as a means to reduce or eliminate populations of pests and fungi that could reduce the quality of these commodities;
- Reduce or replace fungicides and biocides that have food residue concerns;
- Reduce problems associated with discharge of effluents from processing facilities and packing houses;
- Develop best management practices to achieve higher energy efficiency.

### **PROJECT DESCRIPTION**

Ozone has the technical potential to be an effective quality control measure in several packing and processing processes. These include hydrocoolers, dump tanks, cleaning operations, and fungicide dips or sprays. At the completion of this task the researchers expect the technology to be ready for commercialization of ozone as an aqueous disinfectant in fresh produce. Additional practical applications for other fruits and vegetables that are not addressed under the current research may be needed, with each application requiring only several weeks to demonstrate and refine. Currently, the technology of ozone as an aqueous disinfectant is known to the agricultural industry only on a limited basis. This research effort by USDA will accelerate the commercial deployment schedule for this technology.

### **BENEFITS TO CALIFORNIA**

Potential energy benefits from this research include the replacement of hazardous and potentially harmful chemicals, as well as the development of energy efficient ozone application practices. Although ozone will increase energy consumption, food wholesalers will adopt the technology to stay competitive in export markets demanding alternatives to chemical fumigation.

### **FUNDING AMOUNT**

**California Energy Commission: \$150,142**

### **PROJECT STATUS**

- In March, 2002 the project began a pilot test treating citrus fruit in a commercial packinghouse with ozone. These tests continue using techniques and ozone doses determined in laboratory tests. The first tests examined penetration of ozone into the commercial storage containers now in use and were completed in May. Marked fruit were inoculated with penicillium spores (blue mold and green mold) and placed within the packages. Ozone sampling lines were installed and the ozone concentration during the test monitored continuously at seven locations using an API multi-channel monitor. As expected, the production of spores from inoculated fruit

was greatly suppressed by ozone, but only in very open packages and storage boxes.

- The project is now preparing to examine the use of ozone to remove gaseous ethylene from within citrus storage rooms.

#### **FOR MORE INFORMATION**

<b>Ricardo Amon</b> California Energy Commission 1516 Ninth Street, MS-43 Sacramento, CA 95814-5504 (916) 654-4019 <a href="mailto:ramon@energy.state.ca.us">ramon@energy.state.ca.us</a>	<b>Dr. Joseph Smilanick</b> US Department of Agriculture/ARS 2021 South Peach Ave. Fresno, CA 93727
--	--